DOCUMENT RESUME

ED 366 160 EC 302 763

AUTHOR	Richert, E. Susanne
TITLE	Curriculum Guide for Maximizing Student Potential in Required Subject Areas.
INSTITUTION	Kansas State Board of Education, Topeka.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	93
CONTRACT	R206A00008
NOTE	55p.
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Communication Skills; *Curriculum Development; *Educational Methods; Educational Policy; *Educational Principles; Elementary School Students; Elementary Secondary Education; *Gifted; Homogeneous Grouping; Language Arts; Mathematics Education; Program Development; Reading Instruction; Science Education; Secondary School Students; Social Studies; *State Standards; Teaching Methods
IDENTIFIERS	*Kansas State Board of Education

ABSTRACT

This curriculum guide is intended to assist educators to maximize the performance of gifted students and others in required subject areas and is keyed to initiatives of the Kansas State Board of Education (KSBE). Part 1, the introduction, describes the guide's development, states the guide's purpose, specifies the students to be served, and considers program design for the gifted. Recommended program design policies address 10 areas including minimum time, budget, homogeneous grouping, and acceleration possibilities. Part 2 focuses on curriculum differentiation. This covers: (1) general principles (e.g., an integrated, nonfragmented approach and use of effective teaching methods and strategies); (2) process skills (students, products, and projects); (3) content modifications (principles, communication/language arts/reading, mathematics, science, and social studies); (4) teaching required skills; and (5) student evaluation. Part 3 addresses staff development and Part 4 specifically relates curriculum strategies to KSBE directions. (Contains 105 references.) (DB)

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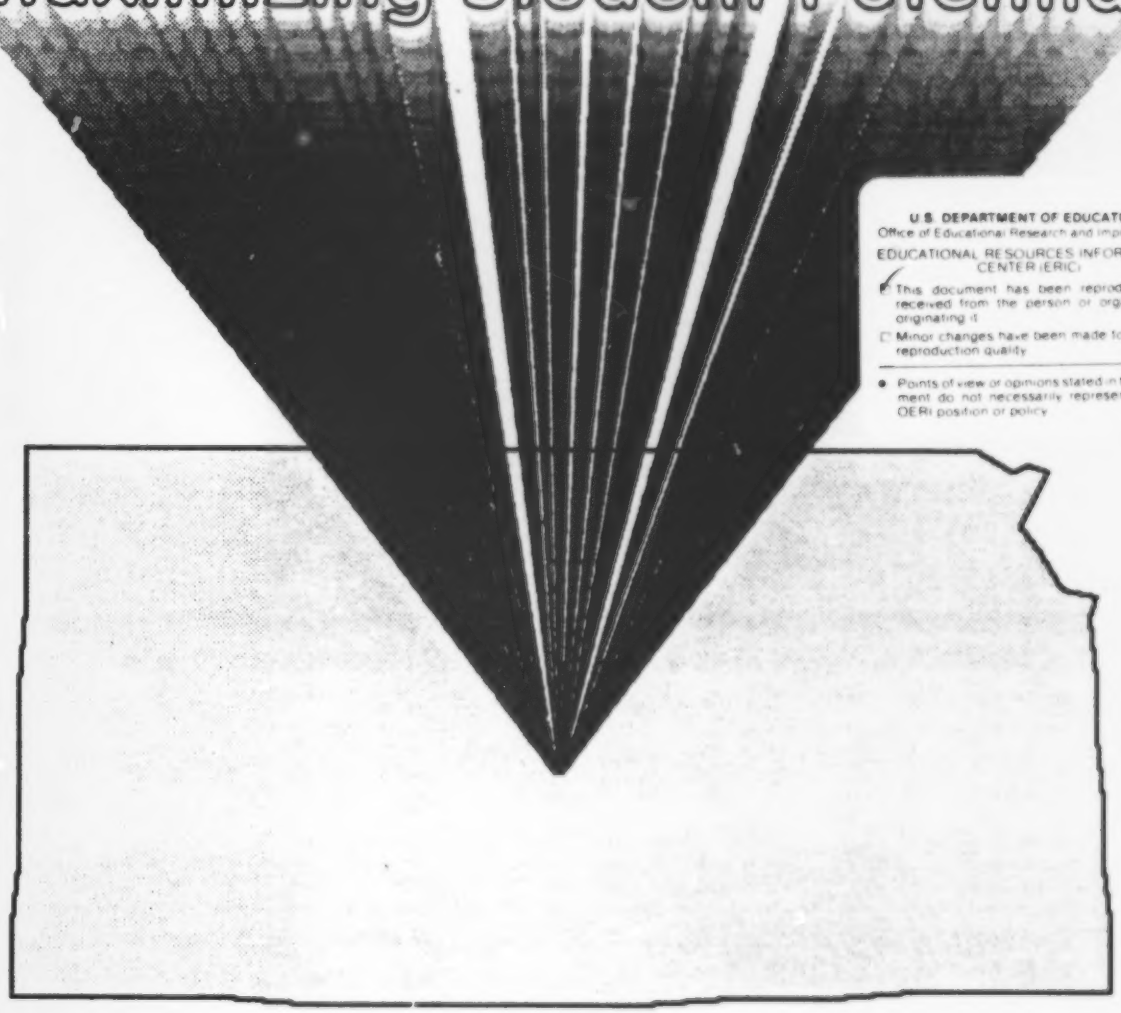
Curriculum Guide for Maximizing Student Potential



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By Dr. E. Susanne Richert
for Kansas State Board of Education

1992

Reprinted September, 1993

EC 302763

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CURRICULUM GUIDE for

Maximizing Student Potential[SM]

in Required Subject Areas

by E. Susanne Richert © 1993

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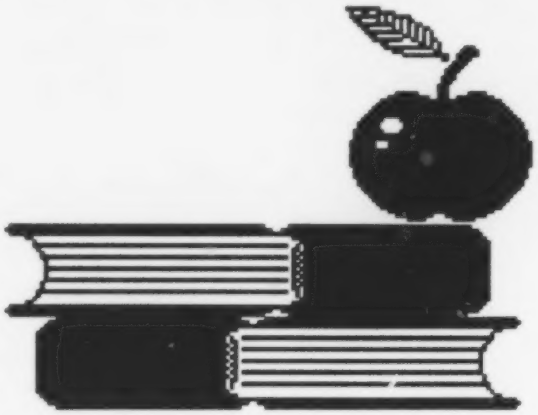


PART I. INTRODUCTION

A. PROCESS OF DEVELOPMENT OF THIS GUIDE
B. PURPOSE
C. STUDENTS TO BE SERVED
D. PROGRAM DESIGN
1. Problems in Gifted Programs
2. Program Design Recommendations
3. Integration of Program Components, from Staff Development to Identification and Evaluation
E. RECOMMENDED POLICIES

A. PROCESS OF DEVELOPMENT

This curriculum guide for Maximizing Student Potential™ in required subject areas has been prepared by Dr. E. Susanne Richert for the Kansas State Board of Education's Javits grant, funded by the U.S.O.E. This guide is based on works cited in Part V. and references by the author. The recommendations made are not necessarily those of the Kansas State Board of Education or the U. S. Dept. of Education.

This guide was developed in accord with principles of maximizing gifted potential in both cognitive and affective areas (Richert, 1993). In addition to the references listed, sources include recent standards proposed by the national councils of teachers of English, mathematics, science and social studies and the suggestions of over thirty educators.

These individuals bring expertise, experience and representation from various levels of education (primary, elementary, secondary and higher education, and from different content specialties (language arts, English, math, science and social studies)).

The recommendations for modifications in required subject areas may be applied to identified students with gifted potential in homogeneous grouping, which is being recommended. It may also be applied to general education and academic classes for vocational students, since the methods have been demonstrated as being effective with students of all abilities (Richert, 1993 forthcoming).

The curriculum strategies recommended in this guide address several significant initiatives of the Kansas State Board of Education, especially those asterisked, including:

- STRATEGIC DIRECTIONS: 1, 3*, 4*, 5, 6;
- QPA : 1*, 2, 3, 4, 5*, 6*, 7*, 8*, 9, 10;
- SCANS COMPETENCIES: Resources, Interpersonal skills*, Information Systems, Technology;
- SCANS FOUNDATIONS: Basic skills*, Thinking skills*, Personal qualities*.
- STANDARDS AND MEASUREMENTS for Vocational Ed., Perkins Act: 1*, 2, 3, 4, 6*.

These Kansas State Board of Education directions, and how they relate to this guide, are further detailed in Part V.

B. PURPOSE OF THIS GUIDE

This curriculum guide is designed to provide educators, school boards, legislators, parents and community members with guidelines and resources to help their students achieve their maximum potential performance in required subject areas.

The recommendations in this guide are also designed to provide all students with educational opportunities and experiences to allow them to develop their cognitive, academic, creative and emotional capabilities to the maximum. These educational experiences will help students become self-directed learners.

In order to achieve these goals, it is critically important that methods, strategies, materials and evaluation be modified to meet the individual needs of students. Only in this way can students maximize their potential, for their own benefit and the benefit of society and the planet. This developmental process requires a learning environment where students feel safe in: risk-taking, problem-solving, decision-making and independent thinking.

There is some intentional repetition of material, since it is assumed that different audiences will focus on various subjects, depending on their diverse interests and needs.

C. STUDENTS TO BE SERVED

1. All Students

All students need a curriculum for Maximizing Student Potential™ in order to develop their highest cognitive and affective abilities. Using Richert's methods, the required curriculum will evoke students' maximum performance. Some students who were never previously identified as gifted will manifest obvious gifted potential in the first year.

They will then be able to be identified to receive the additional services that they may need as gifted students.

2. Students with Gifted Potential

Students with gifted potential may include up to 25% of a district's population, including representative proportions of all populations based on cultural background, economic status and gender.

This may include students with the following diverse exceptional abilities:

1. Exceptional creative thinking ability;
2. Specific academic aptitude;
3. Superior intellectual ability;
4. Exceptional psychosocial abilities: including skills in leadership, oral and written communication and management ;
5. Outstanding abilities in visual, performing or vocational arts.

The more exceptional the student, the more that student needs to be involved in this kind of curriculum

3. Differences in Needs of the Two Groups

The differences in the needs of all students and those with gifted potential are in the amount of time they may need to work on achieving their personal maximums: students with gifted potential need this kind of curriculum the majority of the time; all students need this approach at least some of the time.

D. PROGRAM DESIGN

1. Problems in Programs for the Gifted

There are at least four major problems in education of the gifted in the United States. These problems include:

1) Fragmentation of curriculum within programs;
2) Lack of K-12 articulation;
3) Inequity in who is being served in programs. The poor are under represented by 100-500%, culturally different students are under represented by 30-70% and underachieving gifted students are under represented by an unknown percentage.
4) Inappropriate expectations of teachers, especially in required subject areas, tends not to provide for the needs of students with gifted potential.

These problems may result in students either being excluded from programs or being penalized for being involved in a gifted program.

2. Program Design Recommendations

Students with gifted potential may best be served by being placed in part time homogeneous grouping for required subject areas, in addition to other options such as pull-out programs. On the elementary level, up to 25% of students may be regrouped for certain subject areas; minimally language arts/reading starting in grades K-3. After that level, students should definitely be regrouped for mathematics.

Beginning in middle school and through high school, there should be separate sections for up to 25% of equitably identified students in reading/English and math.

(See Richert, 1991 and 1992, for equitable identification procedures).

Available research indicates that no single program design or model can best serve all gifted children. Given the diversity in the abilities of gifted children, multiple options should be available.

These multiple options should be carefully matched to student needs, interests, learning styles and preferences. In designing a program, districts should consider local factors such as:

- school and community philosophy;
- number, type and distribution of students to be served;
- resources available to the district.

3. Integration of Program Components: From Staff Development to Evaluation

While this guide focuses on curriculum, it is essential that it be considered with other aspects of programming. In developing a program, it is crucial that all of the following design elements (most of which are addressed in this guide) are coordinated:

- **Staff should be trained** to implement both curricular and administrative components.
- **Identification procedures** should be equitable. This means that they should identify representative proportions of each demographic group in the district, and that they should be comprehensive, i.e. include at least 25% of the district's students.
- **District policies** should be in place so that all students may achieve maximums.
- **Multiple program options** must be developed to meet students' diverse needs.

- **The curriculum** must:
  1) Address the population that is identified,
  2) Be appropriate for the specific option in which it is used.
  3) Include both affective and cognitive objectives for achieving maximums.
- **Evaluation** procedures must be consistent with the identified needs of students and with the different curriculum objectives of various program options.

E. RECOMMENDED POLICIES

Policies addressing the following issues should be implemented in any program designed to maximize gifted students' potential:

1. Minimum time in a program,
2. Budget,
3. Homogeneous grouping,
4. Not penalizing students in pull-out programs,
5. Acceleration possibilities,
6. Credit,
7. Attendance and record keeping,
8. Evaluation and grading,
9. Access to resources,
10. Internships, mentorships, independent study and cross-age grouping.

These policies will also benefit most other students.

1. Minimum Time in a Program Option

The time spent by each student, per week, in an elementary gifted program option that provides homogeneous grouping should be at least 225 minutes. This time may be scheduled in several ways: for example, as five 45 minute periods, two half days, or one full day. Occasionally, larger blocks of time may be needed or useful depending on the subject areas addressed. Reading/language arts, on the elementary level for example, works best in blocks of 1-2 hours.

Flexibility in scheduling may be necessary to meet the needs of children and the activities in which they are involved. (See PART II. A. 2. Methods and Teaching Strategies.) On the secondary level there should be separate sections for at least math and English (or reading/ language arts).

2. Budget

- **Curriculum Materials.** Districts should budget for extra materials, equipment and supplies for curriculum purposes. These will vary based on the content area. Some depend upon content area and are specified in each of the content areas in section II.C.
- **Staff Development.** Every district has its own unique staff development needs. Assessing needs should be done in relation to Part IV, Staff Development Recommendations.

3. Homogeneous Grouping

Grouping students homogeneously is recommended in required or elective subjects, (either in cluster classes on the elementary level, or in separate courses on the intermediate and secondary levels) when based upon appropriate equitable criteria (see Richert, 1991, 1993). To be included, students should demonstrate some, not necessarily all, of the following characteristics:

1) self-direction / self initiative (products or projects produced outside of school);

2) creativity (as demonstrated in behavior, products or creativity tests);

3) student choice, which may be assessed through an interview, using an interview protocol focusing on criteria 1 and 2.

4) exceptionally high achievement for their demographic group in a specific academic area (not necessarily all)

4. Avoid Penalizing Students in Pull-Out Options

A gifted program should offer students, *different, not more* work. In order to avoid penalizing students in pull-out options, districts should implement the following policy and monitor it carefully:

Assignments required as part of regularly scheduled gifted programs should replace, not add to, a gifted student's regular classroom workload.

5. Acceleration: Individual Progress/ Competency/Outcomes-Based Options

While an individual progress or competency based approach is a goal for all students, it is especially necessary to prevent under achievement among students with gifted potential. Acceleration alone will not meet all the needs of gifted students; it is only one of the kinds of curriculum differentiation required. While the higher level process skills are a more important priority, acceleration is of benefit to most academically achieving students with gifted potential. It should be tailored to a student's needs and students must be excused from material they have already mastered.

Students with gifted potential are as different from each other as they are from the rest of the population. They have varying needs for acceleration, especially at different stages of development. Acceleration may range from being excused from work they have previously mastered to grade-skipping. The time saved can be used to work on higher level process skills (see Part II.B., below) or to work on higher level content (see Part II.C., below). Districts should have policies in place to meet students' individual and diverse needs, which will fall into one or more of the following four categories:

(a) **In the regular classroom**, students should be pretested in basic skills and excused from work already mastered. To do less is to waste their time and penalize them by forcing them to repeat work they already know.

(b) **In content specific program options** (See Part II.C., below), students should be pretested for content knowledge and excused to go onto higher level cognitive activities which apply that content, if warranted.

(c) **Students functioning two or more years above grade level in a single area** (this will include almost all of the identified intellectually gifted students) should be offered the following possibilities:

- Continuous progress in a basic skill, but maintained at the same grade level;
- Continuous progress in a basic skill, but going to a higher grade level for certain subjects;
- Curriculum compacting or straight linear acceleration (the same work but at a faster pace);

(d) **Students who are three or more years above grade level in most subjects**, need more extreme forms of acceleration. Provided students prefer the company of older children outside of school, the following are possibilities:

- Early entrance to a higher level school, or early exit from the existing school;
- Skipping the last year of any level in school;
- Other forms of grade-skipping.

6. Credit

Students should be given academic credit and released from previously mastered material if they can demonstrate competency through a test score, a product, or a grade from a course completed elsewhere. On the secondary level they should also receive academic credit for such options as independent study, internships and mentorships. This will acknowledge both the quantity and quality of student work. Furthermore, such a policy will reinforce, rather than penalize, independent learning. Independent learning is one of the crucial objectives of a gifted program.

7. Access to Resources

All students should have unlimited access to libraries, media, computer centers, and other resources within their buildings. Students with gifted potential need to have occasional access to resources beyond their schools, such as data-bases reached through modem, higher level libraries and laboratories, experts in the community, mentors and other human resources. Policies should be implemented to readily accommodate these needs, inside or beyond the regular school building.

8. Record Keeping for Attendance

All students need occasional access to resources beyond the school building. Neither students nor districts should be penalized for providing learning experiences beyond the school building. Students should be counted legally present in the regular classroom when attending gifted program related activities, under the supervision of school personnel, even if they are outside the building.

9. Evaluation and Grading Should not Penalize the Gifted

Grading and evaluation of gifted program options (particularly advanced, honors, or AP classes) should be weighted to reflect the relative difficulty of these courses and to avoid penalizing students for attempting more difficult work. If weighting is not possible, grades should be based on what equivalent work would earn students in a regular class. (See Part II.F., Student Evaluation, for more on the subject.)

10. Internships, Mentorships, Cross-age Grouping and Independent Study

All students often need to study in groups with people other than their age-mates in order to develop their full intellectual and emotional potential. Districts should allow their students, as they show need and interest, non age-mate grouping options. Grouping options, including the following, should carry academic credit:

- independent study,
- internships, mentorships,
- cross-age grouping.

PART II. CURRICULUM DIFFERENTIATION

OUTLINE FOR CURRICULUM DIFFERENTIATION

A. GENERAL PRINCIPLES
1. An Integrated Approach
2. Methods and Teaching Strategies

B. PROCESS SKILLS FOR ALL PROGRAM OPTIONS
1. Introduction
2. Cognitive: Critical and Creative Thinking
3. Independent Learning
4. Communication
5. Affective

C. CONTENT AREA MODIFICATIONS
1. General principles
2. Communication
3. Math
4. Science
5. Social Studies

D. TEACHING REQUIRED SKILLS

E. PRODUCTS AND PROJECTS

F. STUDENT EVALUATION

A. GENERAL PRINCIPLES

1. An Integrated Approach

Cox, *et al.*,(1985), Richert (1985), Tannenbaum (1983),Van Tassel-Baska (1988) and others stress the serious problem of curriculum fragmentation in programs for the gifted. It is essential that districts develop articulation of K-12 high level process skills so that there is continuity and integration in the educational experience of all students. While the process skills may be discussed separately, they are <u>not</u> intended to be taught in isolation. These other kinds of curriculum fragmentation should also be avoided:

- the teaching of process skills, in isolation from content, or content separately from process;
- teaching of either process or content that does not lead to application in a product, performance, or service;
- products with the teacher as the sole audience;
- repetition of skills already mastered.

In a curriculum for maximizing student potential, **process and content should be integrated** to lead to the development of a product or performance by an individual or group of students. The teacher then helps the students find an appropriate audience.

2. Methods and Teaching Strategies

While there is disagreement in the field about some issues, experts in the education of the gifted concur that curriculum for the gifted must be differentiated (Cox, 1985; Gallagher, 1979; Maker, 1986; Tannenbaum, 1983; Kaplan, 1982; Renzulli, 1977; Richert, 1983, 1990, 1993; Van Tassel-Baska, 1988). While curriculum modifications may be accomplished in various ways, there seems to be consensus on differentiation within the following categories:

a. Content, process, and product differentiation,
b. Grouping,
c. Motivation,
d. Learning environment,
e. Student choice; providing variety and flexibility,
f. Organization, responsibility,
g. Resources,
h. Evaluation.

a. Content, Process and Product Differentiation

In a curriculum for maximizing students potential, the process, content, product and the relationship between these components all require modification.

Each of these areas is addressed directly in sections: A.4, Products; B, Process; and C, Content. For students with gifted potential, process and product are more important than content and skills. The emphasis should not be in learning more information, but in learning different, higher level information which is then applied to some kind of project, process or product.

The process skills that need emphasis are: higher level creative and critical thinking, advanced emotional development and the development of independent thinking, learning and acting. In order to reflect students' diverse interests, the content should become interdisciplinary. Integrating these processes using an interdisciplinary approach will make the content more complex , abstract and interesting.

b. Grouping

The gifted need various kinds of groupings at different stages in their development, including:

- Homogeneous as well as heterogeneous classes;
- Small group, as well as individual activities and projects;
- Older mentors;
- Serving as mentors for younger students;
- Relationships with people from diverse backgrounds and ages;
- Appropriate audiences for their products.

c. Motivation

Student interest should be the major motivational source in order to galvanize the intrinsic motivation, energy and high abilities of the gifted. To do this, students need to be able to make many choices in the content of their assignments and products based on their interests and learning styles.

d. Organization and responsibility

The major change in a student-centered curriculum is the shifting of decision-making responsibility from the teacher to the students. This will change both the learning environment and the level of cognitive and affective outcomes. This does not mean that the teacher abdicates responsibility, but rather acquires a new responsibility: generating appropriate choices so students have experience in making decisions. Only in this way can students use their intrinsic motivation to become responsible and independent learners.

Classroom management of individual and small group work, in various forms and for diverse purposes, will develop students' abilities to negotiate, cooperate, collaborate and meet their commitments to each other.

e. Learning Environment and Community

The following environmental elements are prerequisites for healthy, authentic, non-manipulative and psychologically safe relationships between teachers and students, and among teachers and students:

- **A non-judgmental, accepting atmosphere** which fosters open-mindedness and encourages the

expression and critiquing of diverse views. This is essential for the development of critical thinking skills and healthy self-acceptance.

- **Evaluation criteria that include originality, divergence and difficulty**. These are crucial for creativity and risk-taking.
- **Acceptance and respect of differences and limitations** and stress on cooperation as opposed to competition. This is required to nurture healthy self-concepts and relationships.
- **Opportunities for decision-making** about assignments, planning and evaluating their own work. This will develop both critical thinking and autonomous learning
- **Responsibility for self-discipline and commitments to others.** Students should be involved in developing class rules, criteria for evaluation, plans, and taking responsibility to and for each other for meeting their commitments to others and to the class rules.

f. Student Choice: Variety and Flexibility in Content

A crucial responsibility of a teacher who wants to maximize students' potential is the offering of variety and flexibility in content in order to evoke intrinsic motivation. This is the key to developing maximum cognitive and affective potential.

This is done by generating choices related to students' interests in the following aspects of curriculum:

- in the content of assignments and products;
- in the media to be used for products;
- in the length of time devoted to an investigation, project or products so that students are not deterred from attempting more ambitious work;
- in grouping (individual, mentor, small or large group);
- in resources selected for completing projects or products;
- in the basic or research skills to be applied;
- in the criteria for evaluation;
- in the methods of evaluation to be used.

g. Resources

1) Human resources

Students' feelings of competency and self-sufficiency should be encouraged by requiring them to perceive themselves as their first learning resource. After this, students should turn to their peers for assistance before they go to teachers or other adults. They must also have access to human resources and specialists in the community.

2) Material Resources

All students need to use resources beyond the classroom. This includes access to higher level libraries, laboratories, computer data bases and information from other media including audio and video cassettes.

h. Evaluation Procedures

All students need to learn to evaluate their projects and their individual progress, rather than relying only on the judgment of teachers and other adults. Section II.F., below offers more specifics on students' evaluation. In brief, evaluation criteria should focus on:

- individual progress, rather than

comparative judgments;
- *originality, rather than conformity* to teacher expectations;
- the learning process, including initiative, rather than just tests;
- the learning outcome or product, rather than just test scores.

B. PROCESS SKILLS FOR ALL PROGRAM OPTIONS

1) Process Skills

The process skills for maximizing potential should include those on the highest levels of various cognitive and affective taxonomies (Bloom, 1956; Guilford, 1967; Kohlberg, 1983; Krathwohl, 1984; Maslow, 1970; Richert, 1991). These advanced objectives may be grouped in the following way:

1. Cognitive
- critical thinking skills: analysis evaluation.
- creative thinking skills: fluency, flexibility and synthesis.

2. Independent Learning
- decision making
- problem solving
- research and planning.

3. Communication Skills
- verbal and non-verbal
- use of computers and other technology and media.

4. Affective Skills
- intrinsic motivation
- self-esteem independent of others' approval
- respect for others
- positive, responsible personal relationships
- altruism.

These process skills should not be taught in isolation. Advanced objectives should be integrated into content areas, teaching and learning strategies, products, evaluation criteria and procedures. To assist teachers in applying process skills to the curriculum, the charts on the following pages illustrate each of the process areas.

The Products and Projects section has charts for each of the process areas. This following part designates strategies and products for each area.

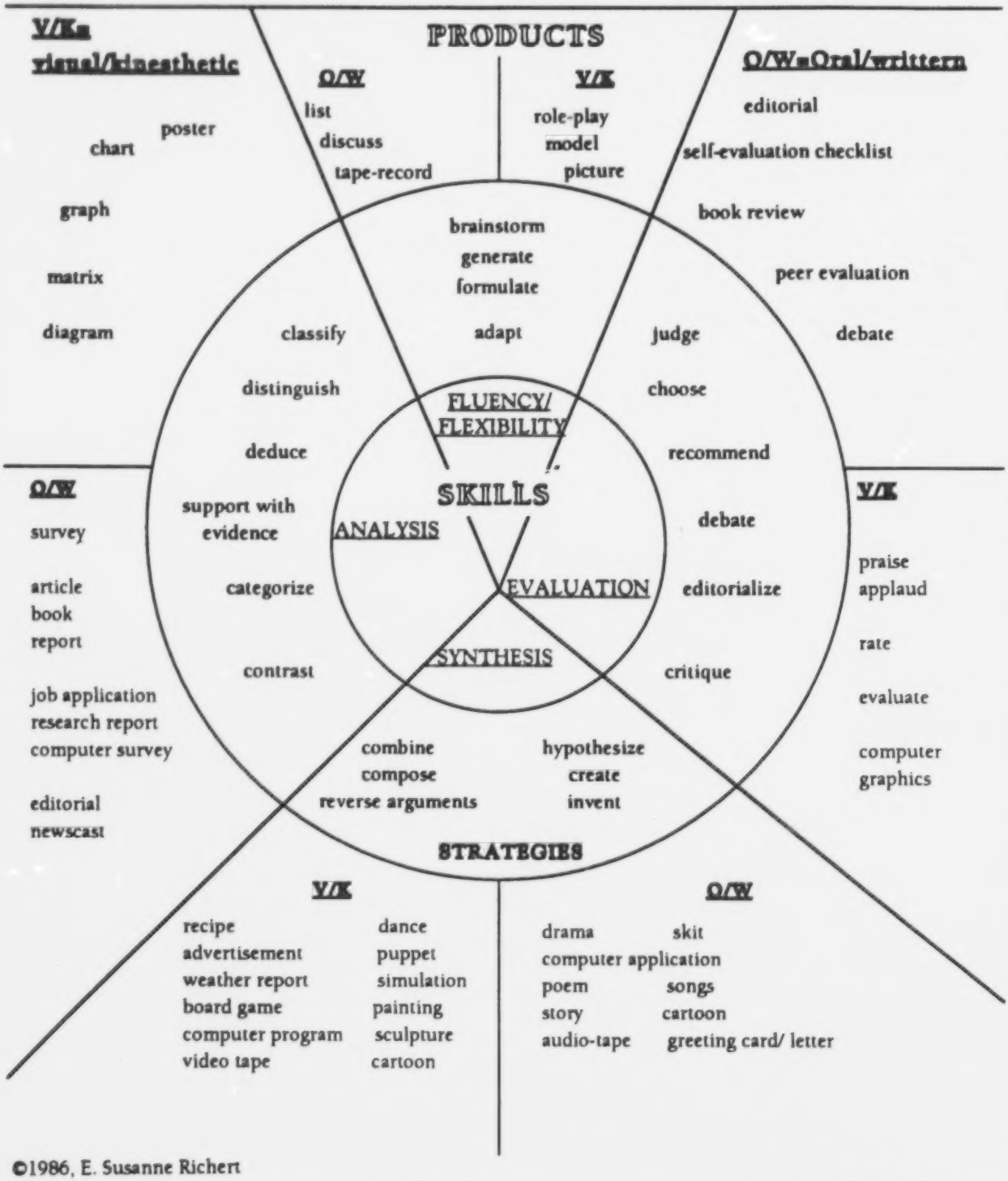
2) Student Products and Projects

Students should be allowed to have a range of choices in doing products and projects. This provides motivation and allows them to explore a wide range of media; so that ultimately they can find their best medium of expression. To encourage such exploration, teachers should suggest and offer examples of media for products in each of the following categories:

- verbal: written and oral,
- non-verbal, i.e.., visual, kinesthetic,
- multi-media: audio and video cassettes, computers, painting, dance, mime, etc.,
- interdisciplinary as well as those specific to each discipline.

The four following pages are charts for each of the process areas. They designate strategies and products specific to areas that are appropriate for students with gifted potential. They will assist teachers in applying the process skills and strategies to the curriculum.

1. CRITICAL/CREATIVE THINKING



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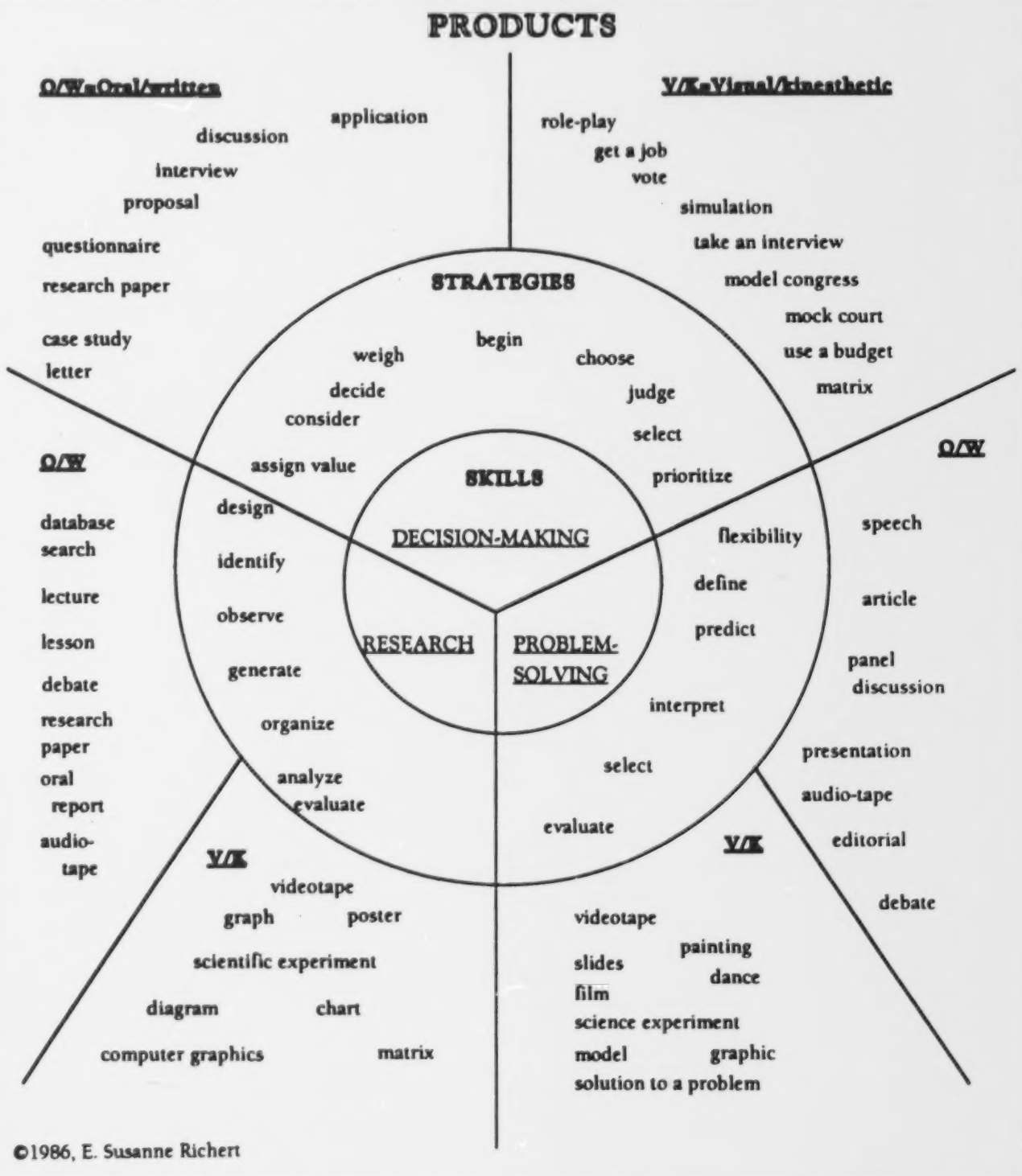
2. INDEPENDENT LEARNING



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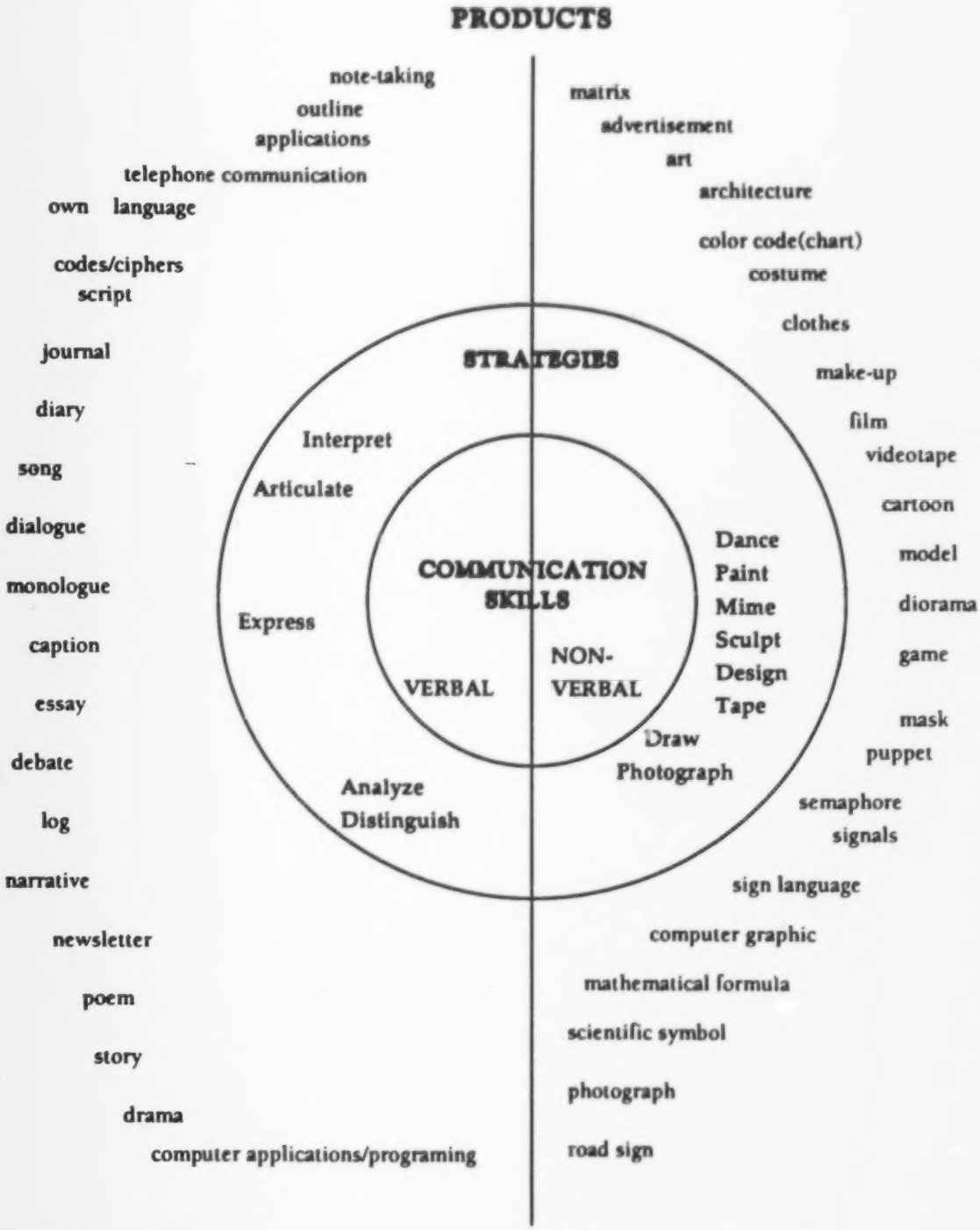
3. COMMUNICATION



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4. AFFECTIVE SKILLS

GOALS: self-esteem,
self-acceptance
intrinsic motivation

GOAL: positive,
responsible
nonjudgmental
personal relationships

PERFORMANCE/ STRATEGIES

interview

autobiography

role model
mentorship
journal
diary

plan
goal-setting

decisions

offering
choices

self-evaluation
counseling

stress management techniques

acceptance of feedback

exercise
nutrition

peer teaching
team play

internships

role-model

cooperation
friendship

small group:
-discussion
-plan projects

research

letter

telephone

employment
mentor

leadership role
volunteer activities
constructive feedback

humor

service

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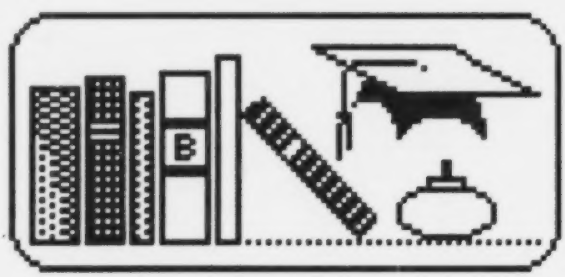
The charts suggest many appropriate products and projects, including the following:

- the type of **medium:**
  auditory/oral,
  written,
  spatial/visual,
  kinesthetic;

- the **process** skills applied:
  critical or creative thinking,
  independent learning,
  communication,
  affective;

- the **content** areas addressed:
  interdisciplinary,
  communication/language arts, math, and science



C. CONTENT AREA MODIFICATIONS

1. GENERAL PRINCIPLES

In programs focusing on specific subject areas, content needs to be differentiated for students with gifted potential. Recommendations for the content areas of Communication/language arts, math, science and social studies are specified in sections 2,3,4 and 5, below. The following four areas of content modification are applicable to all subjects and program options:

a. Higher level process skills
b. Subject/knowledge, interest-based content modification;
c. Acceleration of level or rate of learning;
d. Both discrete disciplines and interdisciplinary approaches

a. Higher level process skills

In every subject, the four areas of higher level process skills must be integrated into the curriculum content. These include cognitive and affective process skills, communication and independent learning.

b. Subject/knowledge

Because research clearly indicates that the distinct abilities of the gifted are evoked by what interests them, content needs to be made interest-based.

This can be accomplished by developing units in response to student interests (using interest inventories or informally surveying the students) or by expanding the subject and making it interdisciplinary. This allows students' interests to be connected to content.

c. Level or rate of learning

Acceleration is always appropriate for the gifted. That doesn't mean simply offering them the following year's curriculum or doing this year's work more quickly. Acceleration should be individualized. Within each program option, each student should be offered a choice of materials at their highest mastered reading level and be allowed to progress at the best pace he or she can manage.

Achievement test results are useful in helping students select materials at an appropriate level and in excusing them from skills they've already mastered. This allows them to go on to higher level work.

The objective here is not to have students do more work faster, but rather to give them time to proceed to more complex areas, analyses or products.

Standardized tests, teacher made tests or classroom performance can also be used as indicators for placing a student in a higher grade level for a particular subject, or even for skipping a grade level altogether. This will help save students' time in the basic skills. Students with gifted potential will need other program options to develop higher level abilities, however.

It is important to remember that in a formal accelerated option area such as math (or in an advanced placement course) offering higher content by itself is not sufficient. The higher level process skills described previously also need to be integrated into the content area.

d. Both discrete disciplines and interdisciplinary approaches

Within each discipline, it is crucial that students acquire knowledge of fundamental concepts and different methods of evaluating products and projects. An interdisciplinary approach to curriculum units in each subject area is essential. Cross-disciplinary subjects allow for more complex analyses and products and for integration of students' interests into the curriculum.

Furthermore, in our historical era, every subject area is becoming more interdisciplinary; all knowledge is becoming interrelated. If students with gifted potential are someday to make original contributions to a field, they must be able to integrate knowledge from a range of fields and be able to relate their contribution to various fields.

e. Homogeneous grouping

Homogeneous grouping is recommended when based upon appropriate and equitable criteria. Students should demonstrate some, though not necessarily all, of the following characteristics:

- self-direction and self initiation (as demonstrated by products or projects produced outside the school, or by responsibility taken at home or at jobs);
- creativity (as demonstrated in behavior, products or creativity tests);
- student choice (which may be assessed through an interview, or in using an interview protocol similar to that included in the identification section dealing with program design and policies).
- exceptionally high achievement in one or more academic areas.

2. COMMUNICATION: LANGUAGE ARTS, READING, ENGLISH and COMPUTERS

a. INTRODUCTION

Language arts is directly addressed in the communication section of Process Skills. In a program option that focuses on language arts or English, the following skills should be emphasized - though not to the exclusion of the other process skills.

Use a holistic approach when teaching language arts skills. Language skills are inherent in every discipline and provide educators with an avenue to address the cognitive and affective needs of students. As society progresses into the Information Age, language skills will enable students to function effectively through computer networks and documents produced with word processing programs. Mastering language arts skills will ensure achievement.

b. ADMINISTRATIVE CONSIDERATIONS AND POLICIES

Each of the following policies (elaborated in Part I.E.) should be included in program design. They are all appropriate for language arts/ Communication or English program options and other content areas:

1) minimum monthly time in program
2) budget;
3) homogeneous grouping;
4) not penalizing students in pull-out programs;
   gifted program work should replace, not add to regular classroom work;
5) acceleration options:
   - students should be pretested in skills and excused from mastered skills to go on to higher level cognitive activities;
   - continuous progress in a basic skill, but maintained at the current grade level;
   - continuous progress in a basic skill, but moving to a higher grade level;
   - curriculum compacting or straight linear acceleration (the same work but at a faster pace);
   - simultaneous enrollment in courses at different grade levels, including post-secondary;
6) credit;
7) record keeping for attendance;
8) evaluation and grading;
9) access to resources.

There are additional policy recommendations that are essential to implementation of effective language arts/Communication or English program options for the gifted. These include:

1) **Budget**
In language arts, the budget should provide and allow for the purchase of paperback books, magazines and other supplementary materials to textbooks.

2) **Access to resources**
Students should have easy and unlimited access to libraries, media, computer centers and their resources.

3) **Skills in content areas**
Students should be encouraged to utilize language skills among and within the various disciplines.

4) **Foreign language**
Foreign languages should be offered earlier than the secondary level. Students with gifted potential should be encouraged to learn a second language.

5) **Release from and credit for previously mastered material.**
When students can demonstrate competency through a test score, a product, or a grade from a course completed elsewhere (especially at a higher level) they should be released from previously mastered material. They should get credit, where applicable, especially on the secondary level.

c. REQUIRED SKILLS: SCOPE AND SEQUENCE

The scope of the language arts curriculum is unlimited. It involves development of different products with diverse purposes for a variety of audiences (see the chart on the next page). The sequence of skills does not necessarily follow a linear sequence. Students with gifted potential usually master skills out of sequence with district curriculum guides. Therefore, students with gifted potential should be allowed to move ahead as rapidly as they can and be excused from skills they have mastered.

d. CURRICULUM MODIFICATIONS

1) General Modifications

In teaching the component parts of language (reading, writing, speaking, non-verbal expression and research skills) to students with gifted potential, the general principles of content modification in Part II., B.1. should be applied. The following items should be integrated into the curriculum:

- Higher level process skills;
- Interest-based content and knowledge;
- Acceleration of level or rate of learning
- Both discrete disciplines and interdisciplinary approaches.

2) Spelling and vocabulary

These skills are best taught in context as integral parts of material read and written by the student, rather than as isolated lists from texts.

3) Writing as a process

A national study analyzing the methods of over 70 different writing projects demonstrated that writing is a student-centered process that involves emotional as well as cognitive development (Hillocks, 1983).

Lessons on writing should facilitate the following sequence of research-based steps: motivation, pre-writing, generating the first draft, revising/editing, including peer editing and evaluation.

Therefore, when teaching writing skills, teachers should emphasize the following:

- Motivation should be based on student interests.
- Students should write and produce a variety of writing products, with diverse purposes, for different audiences, as illustrated in the chart at the end of this section. Remember: students should choose what type of products to produce.
- Emphasis should be placed on creative and critical content.
- Students should strive for clarity in writing.
- Proper use of mechanics is an outgrowth of the writing process. It is best done in the editing stage of the writing process.
- Peer editing is an effective technique for learning to edit.
- Evaluation of products is best accomplished with specific, limited, pre-established criteria.
- Assessment should be done by the author, peers, the teacher and others.

4) Reading

- Encourage students to read for pleasure. Give them choices in selecting reading materials. Students must be offered a choice of responses to reading, based on learning styles and interests.
- Literary selections must represent a variety of genre. They must reflect the abilities, interests and needs of students with gifted potential.
- Involve students in the analysis, evaluation and interpretation of materials.
- Students should read for information and be able to evaluate the usefulness and appropriateness of materials.
- Focus on literary criticism as it relates to different genres, particularly in secondary classes.

5) Research skills

- Research skills are crucial for the development of intellectual independence.
- Research skills should be taught in the context of student needs. These skills should be taught while students are working on a research project and as their need for a specific skill arises. Direct instruction is necessary only if they have demonstrated that they have not yet mastered the skill.
- Students should incorporate specialized and varied retrieval systems (primary and secondary sources, computer data-bases) in their investigative procedures.
- The result of research is a creative product. It is evaluated according to pre-established, student and teacher set criteria.

e. TEACHING STRATEGIES

Each of the recommendations in Part II.A, Methods and Teaching Strategies for Maximizing Potential, apply:

- Content/process/product differentiation
- Grouping
- Motivation
- Learning environment and atmosphere
- Student choice; providing variety and flexibility
- Organization and responsibility
- Resources
- Evaluation

Teachers should take the following five steps when teaching all students in language arts:

- Assess learning styles and provide for differences.
- Establish a safe physical and psychological learning environment.
- Provide multiple sources of information and materials.
- Use a variety of instructional techniques (Student centered activities should be the focus of the classroom).

1) Student-centered activities may include:

Laboratory
Research Projects
Games
Manipulatives
Independent study
Individualized pacing
Decision-making
Leadership experiences
Affective experiences
Multi-media use
Mentorships/internships
Role-playing/Simulations
Interviews/Surveys
Debates
Word-processing

2) Teacher-centered activities may include:

Discussions
Demonstrations
Tutoring
Questioning
Lectures

3) Grouping opportunities for:

Individual and small group activities
Having a mentor and being a mentor to younger students

f. EVALUATION

All aspects of evaluation (the evaluator, what is to be evaluated, the criteria, and the procedures for evaluation) apply in the study of Communication or English and language arts and other content areas for students with gifted potential. In addition, the following criteria have special emphasis in a course (or unit) focusing on language:

- **Creativity**: originality, elaboration, flexibility and fluency;
- **Appropriate level** of material;
- **Critical thinking**
  clarity of expression
  clarity of analysis
  appropriateness of evaluation
  appropriateness of form and style to the medium of expression and for the intended audience;
- **Professional standards**—as they apply to student products. The various media and products students with gifted potential produce (research paper, poem,

play, computer program, letter of application, etc. (see product list above for language arts) each require different criteria for evaluation.

Students should be taught to use different evaluation criteria depending upon media, product, purpose and audience. See Section E. for further discussion on evaluation.

5) Individual progress

It is useful to get baseline (or "pre-assessment") data on students in the beginning of the year by evaluating writing samples or other products. These may be compared to a "post-assessment" of a similar sample at the end of the year to derive a measure of student progress.

OUTLINE OF LANGUAGE ARTS PRODUCTS, SKILLS, AND AUDIENCES

MULTIPLE SKILLS	DIFFERENT PURPOSES	VARIOUS FORMS	DIVERSE AUDIENCES
• COGNITIVE	Record experiences Express ideas or opinions Ask questions, get information Catalogue information/ideas Organize tasks Analyze information Report/record information Demonstrate knowledge Teach others Edit own work Edit others' work Computer Literacy	Cluster outlines Sequential outlines Essays Essay tests Research projects Expository writing Dictionaries Checklists Business letters Computer programs Plan activities/work Minutes of meetings Speeches Announcements Editorials Directions News stories Interviewing	Teachers Acquaintances Experts Information Sources Employers
• CREATIVE THINKING	Creative problem solving	Titles for art Cartoons Poetry Satires/fables/myths Narratives Descriptions Plays Graphics "Occasional" cards Radio or TV announcements Advertisements TV scripts or screenplays Cassette recordings (audio/visual) Biographies Autobiographies "Book"	Editors Publishers
• AFFECTIVE • SELF-UNDERSTANDING • EMOTIONAL • INTERPERSONAL	Understanding others Expresses feelings Record experiences Solve personal problems Reinforce relationships Help others Make personal decisions	Greeting cards Personal letter Postcard Invitations "Thank you" notes	Self Peers Parents
• REQUIRED-SURVIVAL SKILLS	Identify own work Follow test directions Complete required forms (school, government, employment) Express complaints Influence others	Name on all work Address Test answers School forms Information forms Application forms Order forms Business letters Bank checks IRS forms	Government business school officials Groups Others

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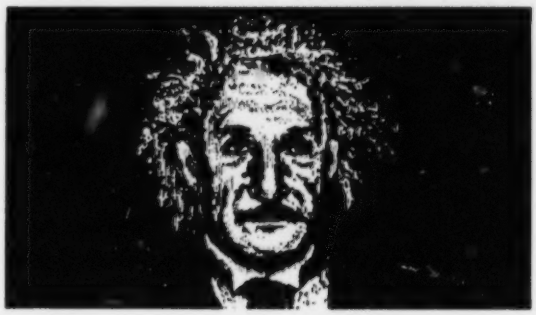

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3. MATHEMATICS

a. INTRODUCTION

Textbooks used in teaching mathematics should follow the recommendations of the standards promoted by the National Council of Teachers of Mathematics. A gifted mathematics program should incorporate necessary skills in the numerical domain, while fostering the use of higher level thinking skills. Students must be presented with a rich variety of experiences to interact with numbers and their operations as they relate to cognitive and affective domains. In addition to basic math instruction, the curriculum should be directed toward an enriching, non-textbook, student initiated type of program. Research on female achievement in mathematics stresses the importance of avoiding sex role stereotyping.

A math program for students with gifted potential should offer qualitative and quantitative study, with emphasis on the former. The focus should be on *different* rather than more or faster work.

b. POLICIES

In order to serve students with gifted potential most effectively, it is important to incorporate specific policies to their benefit. This is especially important considering the multiple program arrangements possible: heterogeneous, self-contained, pull-out, cluster, advanced placement and accelerated classes. Each of the following policies, which is elaborated in Part I.E., is appropriate to mathematics program options and other content areas for students with gifted potential. These policies should be a part of the program design:

1) minimum monthly time in program;
2) budget;
3) homogeneous grouping;
4) not penalizing students in pull-out programs; gifted program work should *replace, not add to regular classroom work*;
5) acceleration options:
    - students should be pretested in skills and excused from mastered skills to go on to higher level cognitive activities;
    - continuous progress in a basic skill, but maintained at the current grade level;
    - continuous progress in a basic skill, but moving to a higher grade level;
    - curriculum compacting or straight linear acceleration (the same work but at a faster pace);
    - simultaneous enrollment in courses at different grade levels, including post-secondary;
6) credit;
7) record keeping for attendance;
8) evaluation and grading;
9) access to resources.

In addition, there are specific policy recommendations essential to implementation of an effective mathematics program for students with gifted potential:

1) **Adequate funding** is essential for the required program flexibility. This funding should include, but not be limited to, calculators, abacus, pattern blocks, tangrams, cuisenaire rods and computer hardware and software. Teacher materials should be provided for non-text, student oriented activities.

2) **Pretesting** is essential to provide for the most effective use of time. It is essential to allow students to test out of mastered material.

3) **Simultaneous enrollment** in courses at different grade levels, including post-secondary.

4) **Evaluation and grading must not penalize students** for attempting more difficult work.

5) **Assignments** required as part of a regularly scheduled gifted program *should replace, not add to*, a student's regular classroom workload.

6) **Early exit** from math courses should be allowed.

7) **Internships, mentorships, apprenticeships and cross-age** activities should be included in district policy.

c. CURRICULUM MODIFICATION IN MATH

1) Approach: flexibility and complexity

In a curriculum for maximizing student potential, mathematics should be designed as a framework for individual learning alternatives. It should be flexible enough to meet the needs of all students.

In order to appropriately teach math to students with gifted potential, teachers must use content that is more complex, abstract, organized with more divergent activities and related to more concrete applications than the regular mathematics curriculum.

2) Basic mathematics concepts and sequence include:

a. Basic skills as the foundation of all mathematics.
b. An understanding of number systems, sequencing, patterns and theorems.
c. Vocabulary - A clear understanding of definition, pronunciation and use of mathematical terms.
d. Research - Understanding the historical development of mathematics and its dependence on then available technology.
e. Accelerated scope and sequence for students with gifted potential.

3) Content and process differentiation

In teaching math to students with gifted potential, the general principles of content modification listed in Part II, B.1., apply:

a. Higher level process skills;
b. Interest-based content, knowledge;
c. Acceleration of level or rate of learning;
d. Both discrete disciplines and inter-disciplinary approaches.

All the process skills listed in this guide are considered essential to math content for the gifted. However, not all students progress at the same rate. Some students may need more emphasis on basic math skills while others will progress rapidly.

Manipulatives are highly recommended because they benefit all students. Students with gifted potential can experience inductive and deductive reasoning much more quickly with these devices. They will also have greater math retention with their use.

4) Application of mathematics skills will include:

1) An understanding of binary operations, number theory and models;
2) Problem solving that is challenging, enriching and includes non-text and non-routine activities;
3) Estimating answers and evaluating the reasonableness of answers.

5) Strategies for teaching mathematics

a. General Approach

Each of the recommendations in Part II.A, Methods and Teaching Strategies, apply:

a) Content / Process / Product Differentiation;
b) Grouping;
c) Motivation;
d) Learning Environment and Atmosphere;
e) Student Choice, providing variety and flexibility;
f) Organization, Responsibility;
g) Resources;
h) Evaluation.

b. Content and skill modifications

In addition to regular mathematics content, students with gifted potential need additional learning experiences that consider:

- Emphasis on real life applications of mathematical principles;
- The aesthetic aspects of nature and the visual and performing arts as they apply to mathematics;
- Understanding the implications of mathematics in ethics which includes statistics (graphs and polls), space technology and the future impact of advances in mathematics;
- The use of tools in mathematics, including: calculators, abacuses, cuisenaire rods, pattern blocks, computer literacy, spread sheet programs, computer ethics, computer modelling, simulations and problem-solving.

c. Learning environment

The learning environment should be one which is student-centered. Students should feel that risk-taking and reasoned views are valued in classrooms and that the teacher's response will be non-judgmental. This atmosphere needs to be rich in hands-on applications and printed materials for students' intellectual stimulation.

d. Organization and responsibilities

The math program should be organized to produce learners who can be independent problem-solvers; capable of applying solutions in a real world context. Task commitment and self-direction characterize giftedness in mathematics and other content areas.

Individualization and self-initiated study are essential to these students. Strategies should be developed to offer students options based on personal style and individual capability.

Teacher and student responsibilities for organization in the classroom may be distinguished in the following way:

- **Teacher responsibilities**:
  a) Offer choices, facilitate and guide in the selection and variety of materials and learning in order to promote intrinsic motivation
  b) Provide teaching and instruction in needed skills for problem-solving,
  c) Teach students to evaluate products and progress,
  d) Provide a safe atmosphere which fosters risk-taking, hypothesizing, collaboration and responsibility.
- **Student responsibilities**
  a) Identify areas of personal interest
  b) Acquire skills necessary for problem solving
    - identify problem
    - develop a plan for a solution(s)
    - implement the plan
    - evaluate the solution(s)
    - develop a product(s)
    - evaluate product(s)
    - develop skills in self-evaluation which include: process, individual progress and product evaluations.

e. Student products

Student-made products should be developed in a mathematics curriculum. Products produced in mathematics may include:

a) one dimensional products, i.e. lines, written formulas,
b) two dimensional products (spatial/ visual) i.e. graphs, spreadsheets, etc.
c) three dimensional products, i.e. models, games, (kinesthetic).

Students should be offered choices of creating products in one or more of these areas. These products make the concepts of application, transfer and creativity useful, applicable and realistic experiences. The chart on the following page suggests a variety of products appropriate for mathematics.

f. Evaluation in Mathematics

In the study of mathematics, as well as the other content areas, all modifications for evaluation apply. This includes the criteria and the procedures for evaluation and what is to be evaluated. See section II.F., Student Evaluation, below. In addition, the following three evaluation criteria should be present in a course or unit focusing on math:

1) Process evaluation

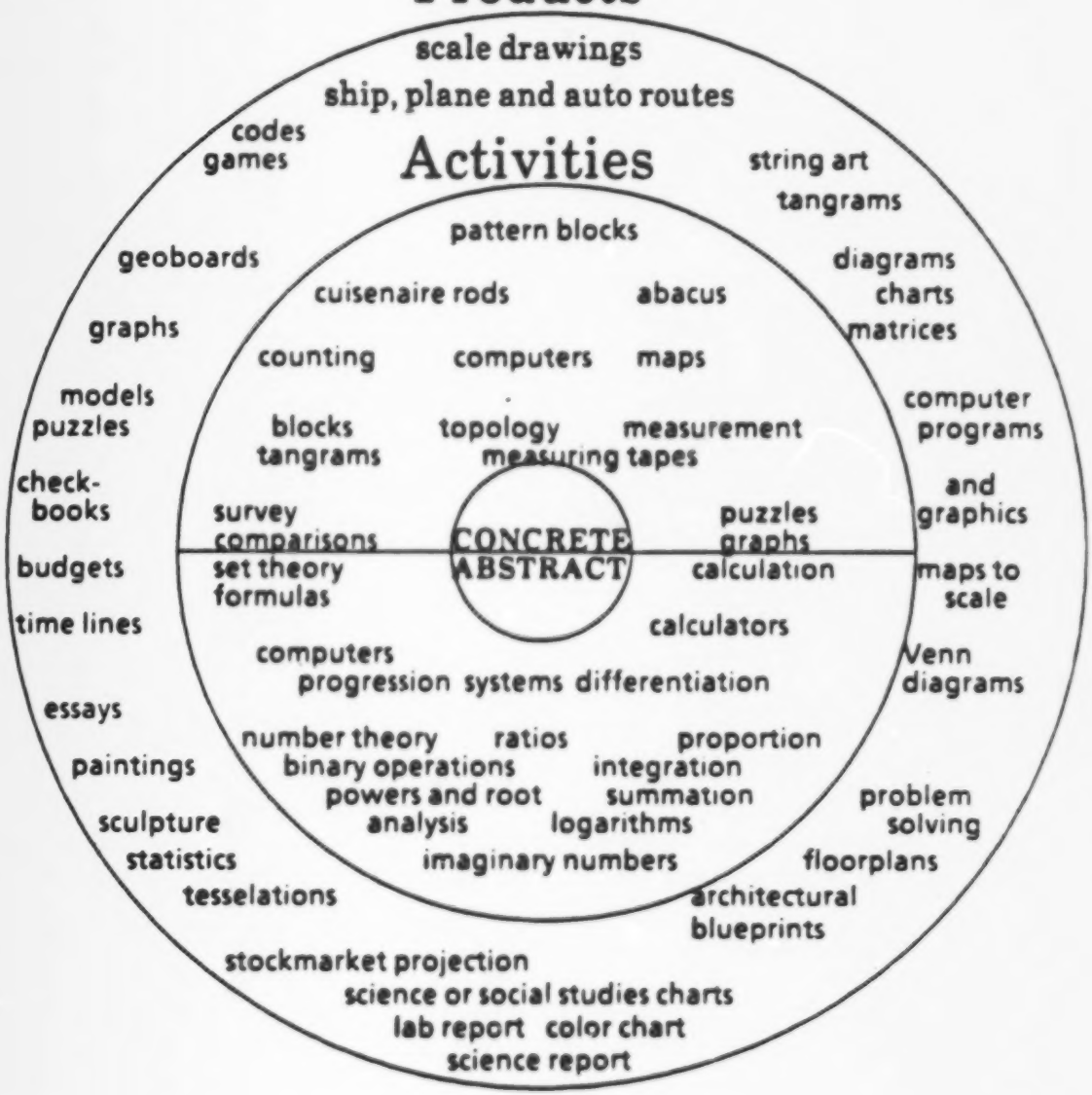
Risk-taking, the willingness to be wrong and the capacity to analyze a problem or project that did <u>not</u> succeed are all appropriate evaluation criteria in math for students with gifted potential.

The capacity to perceive applications of mathematics in other disciplines is essential to the development of a mathematician and is therefore a useful criterion.

2) Product evaluation

The criteria students should strive for are the same as those used in the profession, which will vary according to the application, product and medium of expression chosen by the students (it could be anything from art and music to architecture and science).

MATHEMATICS
Products and Strategies



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4. SCIENCE

a. Introduction to science for students with gifted potential.

Productive science education should produce scientists and informed world citizens who are prepared to deal responsibly with social issues related to the applications of science and technology. Instead of just learning about process skills, which in science are scientific methodology, students need to learn and use those skills to achieve a result, i.e. "real life" research without predetermined outcomes. In science, the avoidance of sex role stereotyping is vital if females are to develop their full potential.

In addition to learning concepts, students need to use their knowledge of concepts to extend their understanding at the analysis, synthesis, evaluation and ethical levels. The basic concepts students should understand include:

1) The nature of scientific inquiry;
2) The limitations of science and the scientific method;
3) The interconnectedness of elements of the physical world;
4) The scientific basis of societal and global problems;
5) The historical development of scientific concepts and their dependence on the technology of the time;
6) Our interdependence with all species in nature, and the importance of the global ecosystem.
7) The rapid rate of change of scientific information and the flexible nature of the discipline;
8) Ethical consequences to the use of research and new technologies.

b. Policies for Science

Students with gifted potential require time and resources beyond those generally provided by a regular school program. Each of the following policies, which are elaborated in Part I.E., are appropriate for science program options and other content areas. They should be part of program design:

1) Minimum time spent in the program,
2) Budget,
3) Homogeneous grouping,
4) Not penalizing students in pull-out programs,
5) Acceleration possibilities, such as:

- students should be pretested in skills and excused to go on to higher level cognitive activities;
- continuous progress in a basic skill, but maintained at the same grade level;
- continuous progress in a basic skill, but going to a higher grade level for that subject;
- curriculum compacting or linear acceleration (the same work but at a faster pace);

- simultaneous enrollment in courses at different grade levels, including post-secondary.

6) Credit,
7) Record keeping for attendance,
8) Evaluation and grading that does not penalize students for attempting more difficult work,
9) Access to resources.

Additional policy recommendations that should be stressed in the implementation of an effective science program option are:

1) **Materials**
Laboratory equipment and materials must be provided at all levels, K-12. Scientific periodicals should be made available.

2) **Testing**
Pretesting on content and process skills should be administered. Students should be able to test out of mastered materials and use their time in the most effective manner possible.

3) **Simultaneous enrollment** in courses at different grade levels, including post-secondary, should be encouraged.

4) **Assignments** required as part of a regularly scheduled gifted program **should replace, not add to**, a student's regular classroom workload.

5) **Evaluation and grading must not penalize students** for attempting more difficult work.

c. Required Skills and Sequence in Science

There are certain basic process skills, dealing with the scientific method, that are common to all grade levels of science instruction. These skills are integrated into science courses as suggested by the chart on the following page. They are practiced repeatedly, with a greater level of sophistication and elaboration than in the regular classroom. Some of the most important skills include the following:

1) Observing/communicating,
2) Classifying,
3) Inferring,
4) Predicting,
5) Measuring,
6) Interpreting data,
7) Making operational definitions,
8) Formulating questions and hypotheses,
9) Experimenting,
10) Formulating models.

d. Curriculum Modifications in Science

While taking into consideration the individual interests, abilities and learning styles of students with gifted potential, certain content modifications are appropriate for **all** students. In teaching science for **Maximizing Students' Potential**, the general principles of content modification in Part II.A, should be applied:

- Higher level process skills,
- Interest-based content and knowledge,
- Acceleration of level or rate of learning,
- Both discrete disciplines and interdisciplinary approaches.

These science content and process skills should be offered at an accelerated, more complex and higher level of thinking than for regular classroom students.

Emphasis should be placed on the following approaches:

- Inquiry,
- Independent studies,
- Laboratory experiences,
- Open-ended exercises,
- Presentations before professional audiences,
- Mentorships.

e. Instructional Strategies in Science

1) Introduction

Each of the following recommendations, in Part II.A, Methods and Teaching Strategies, apply:

- content/process/product differentiation;
- grouping;
- motivation;
- learning environment, atmosphere;
- student choice; providing variety and flexibility;
- organization and responsibility;
- resources;
- evaluation.

2) Intrinsic Motivation and Self Awareness

Curriculum should help students to understand themselves and gain awareness of their strengths and limitations. The following areas and goals are critical in structuring a positive learning environment:

- Interest: define, develop and expand areas of personal interest in order to expand intrinsic motivation.
- Learning styles: provide a variety of materials and methods suitable to different or preferred approaches.
- Capabilities: recognize and accept abilities and limitations.
- Responsibility: provide students with choices so they may develop their decision-making skills and an understanding of the consequences of choices.

f. Curriculum Organization and Responsibilities

Curriculum should be organized to develop multiple options. In this way, students may develop into intrinsically motivated independent learners. Strategies should be developed to offer students choices and variety. The following strategies are appropriate:

1) Flexibility

a) The classroom must provide an atmosphere that fosters creativity, critical thinking and problem solving skills. The role of the teacher becomes chiefly the provider of variety and choices in the following areas:

- content;
- time;
- grouping;
- resources;
- cognitive skills.

b) The student-centered and teacher-centered activities listed below will create the most effective learning environment:

Student Centered Activities

laboratory;
learning activities packet;
research projects;
games;
manipulatives;
independent study;
instructional modules;
model building;
simulation;
observation.

Teacher Centered Activities
lecture;
demonstration;
discussion;
tutoring;
recitation;
questioning.

2) Teacher Responsibilities include: acting as facilitator, rather than director of instruction. Teachers should accomplish the following:

- guide students in selecting from a variety of materials and resources;
- provide a learning environment that allows risk-taking so that students may become independent learners;
- provide a variety of small group activities and experiences that allows for peer learning;
- provide direct instruction only in needed skills;
- help students to evaluate their progress.

3) Student Responsibilities include:
a) identifying areas of personal interest and need;
b) acquiring skills necessary for scientific inquiry, including:

- decision-making;
- planning;
- implementing;
- task commitment;
- evaluation;
- risk-taking;
- critical thinking;
- problem-solving;
- curiosity;
- responsibility.

g. Evaluation of Students in Science

All of the aspects of evaluation described in Part II, E., (the evaluator, what is to be evaluated, the criteria and the procedures for evaluation) apply in the study of science and other content areas for the gifted. In addition, the following evaluation criteria should be used in a course or unit focusing on science:

1) Process and individual progress evaluation

- Risk-taking (the willingness to be wrong) and the capacity to analyze an experiment or project that did not succeed are appropriate affective goals and evaluation criteria in science).
- The capacity to generate testable hypotheses (even if they don't work) is essential to the development of a professional scientist's creative thinking and is therefore a useful process evaluation criterion.
- The ability to analyze the social and ethical consequences of discoveries or new technologies is a major responsibility of scientists. Progress toward this goal should be a part of student evaluation.
- Cooperation, collaboration and positive contribution to group work, which is becoming ever more important in scientific research, is an important evaluation criterion.

2) Product evaluation

The standards students should strive for are those used in the profession. For example, those used in the Westinghouse corporation to evaluate the success and progress of research projects.

h. Resources in Science for the Gifted

1) Periodicals

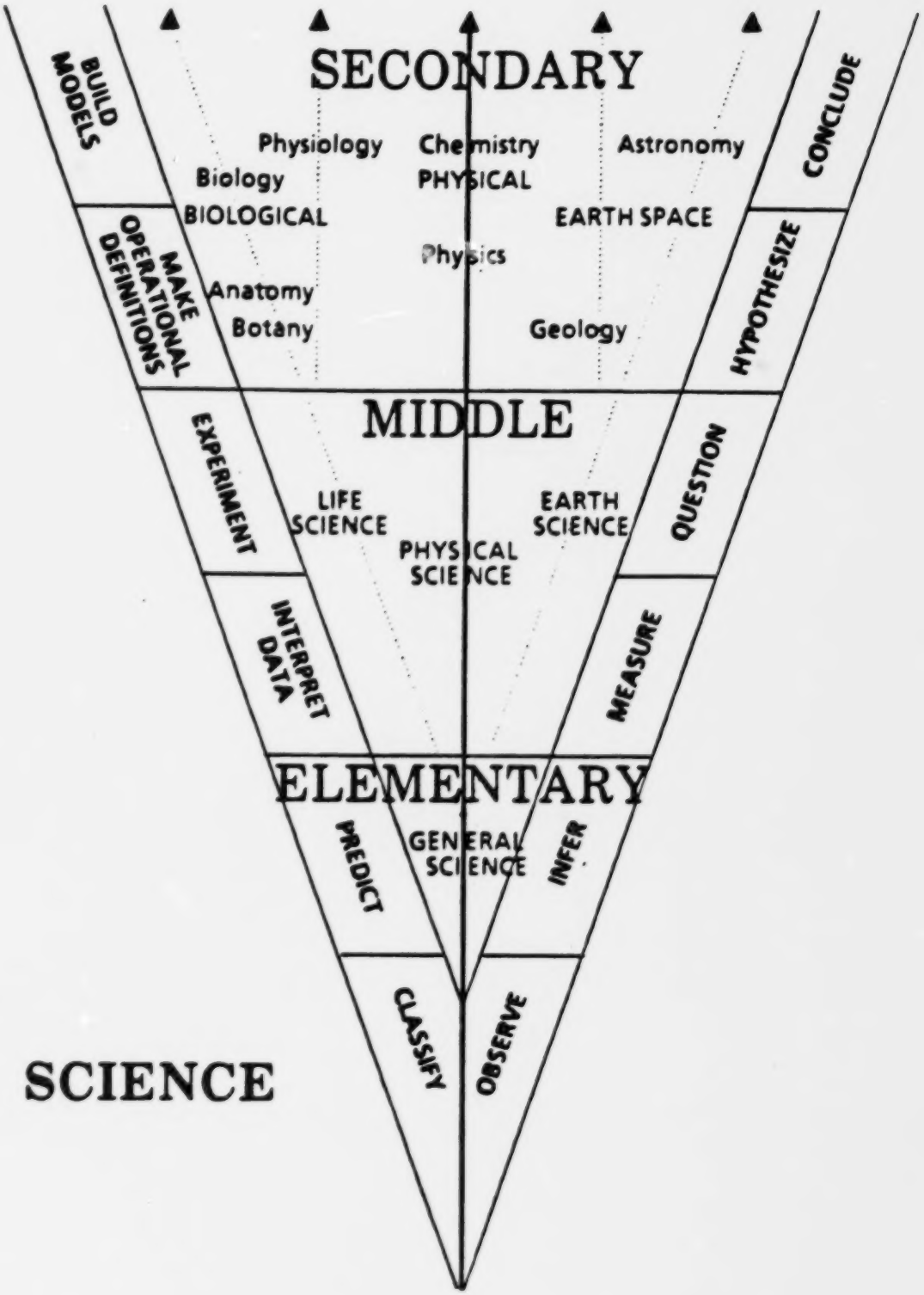
American Scientist
Boys' Life
Challenge
Discover
Environment
National Geographic Magazine
National Wildlife
Nature Scope
New Scientist
Odyssey
Omni
Science
Science Challenge
Science and Children
Science World
Scientific American
The American Biology Teacher
The American Naturalist
The Science Teacher
The Physics Teacher

2) Science Programs

From the National Science Foundation:
BSCS: Biological Science Curriculum Study, Houghton Mifflin
ISCS: Intermediate Science Curriculum Study, Silver-Burdett
ESCP: Earth Science Curriculum Project, Houghton Mifflin
PSSC: Physical Science Study Committee, Heath
SCIIS: Science Curriculum Improvement Study
IPS: Introductory Physical Science, Prentice-Hall
QPS: Quantitative Physical Sciences, Duke University
ESS: Elementary Science Study
The Search for Solutions, Phillips Petroleum
U. S. Dept. of Energy, Washington, D.C.
American Science and Energy Museum.

3) Places

NASA
National Geographic Society, Washington, D.C. 20036
Huntsville Space and Rocket Center, Huntsville, Alabama
Scripps Oceanographic Institute, La Jolla, CA



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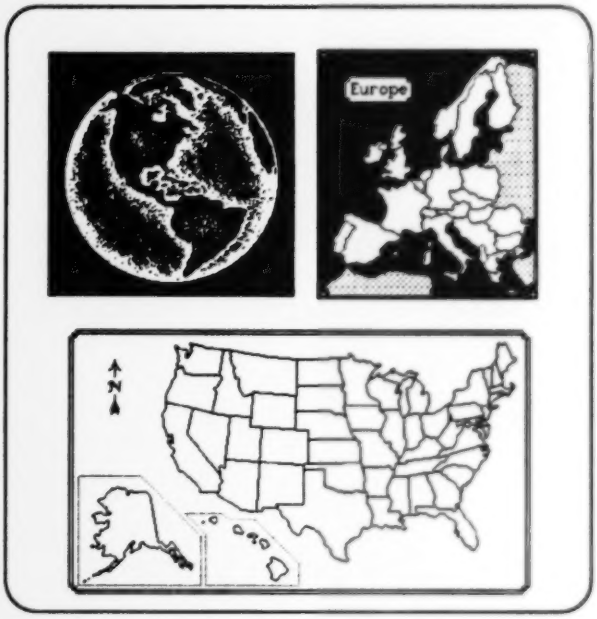


5. SOCIAL STUDIES

a. Introduction

The social sciences study individuals and groups, and how they relate to each other and our planet. Because the world is changing so rapidly, facts quickly become obsolete and understanding process skills takes on increasing importance. The world is quickly becoming a global village. Events taking place on the other side of the planet can now have direct consequences on a child in a Kansas classroom.

An essential component of the social studies curriculum for students with gifted potential is an emphasis on higher level thinking skills, problem-solving and an understanding of responsibility to self, others and the planet. Young people need to have their potential developed by learning experiences that require analysis, synthesis (creativity), evaluation and responsible decision-making.

The process skills identified as essential components of a curriculum for the gifted have particular relevance in social studies. Each skill area (creative and critical thinking, communication, problem solving and independent learning) must be addressed. Because of the complex nature of modern life, these skills are necessary if an individual is to be an effective citizen of our nation and our increasingly global society.

In addition, students with gifted potential may assume formal and informal leadership roles during their lifetimes. Consequently, social studies holds exciting opportunities for preparing effective decision-makers for a global society.

b. Policies

In most states, the majority of students with gifted potential are involved in pull-out programs. They spend the largest part of their time in heterogeneous, self-contained, classroom environments. Recognizing this arrangement, it is important to implement certain policies in order to better serve the needs of students with gifted potential.

Students with gifted potential require time and resources beyond those generally provided by the regular school program. Each of the following policies (which are elaborated in Part I.E.) are appropriate for social studies program options and other content areas for the gifted. They should be part of the program design:

1) Minimum time spent in the program;
2) Budget;
3) Homogeneous grouping;
4) Not penalizing students in pull-out programs.

5) Acceleration possibilities, such as:

- students should be pretested in skills and excused to go on to higher level cognitive activities;
- continuous progress in a basic skill, but maintained at the same grade level;
- continuous progress in a basic skill, but going to a higher grade level for that subject;
- curriculum compacting or straight linear acceleration (the same work but at a faster pace);
- simultaneous enrollment in courses at different grade levels, including post-secondary;

6) Credit;
7) Record keeping for attendance;
8) Evaluation and grading that does not penalize students for attempting more difficult work;
9) Access to resources.

There are additional policy recommendations that must be stressed in the implementation of an effective social studies program option for the gifted. These include:

1) **Adequate funding** is essential for curriculum flexibility. Funding should include, but not be limited to, periodicals, field trips, newspapers, up-to-date maps and globes, current audio-visual materials, data bases and other research materials for in-depth study.

2) **Pretesting** is offered to allow students to test out of previously mastered material and to provide for the most effective use of their time.

3) **Simultaneous enrollment** in courses at different grade levels including post-secondary.

4) **Evaluation and grading must not penalize students** for attempting more difficult work.

5) **Assignments** required as part of a regularly scheduled gifted program *should replace, not add to*, students' regular classroom workload.

c. Required Skills, Concepts and Sequence

Students with gifted potential enter classes with various levels of knowledge. It is important to evaluate student mastery of required skills, concepts and content in order to adjust the rate and level of instruction for maximum performance. Teachers must feel free to use time flexibly in "covering the curriculum" in order to serve this population effectively. The stress should be on fundamental concepts, effective decision-making, and choice in pursuing and reporting on areas of special interest.

d. Content Modification in Social Studies

The following content modifications and strategies are appropriate for effective options in a social studies program that maximizes student potential.

1) Intra/Interdisciplinary Approach

Concepts and themes should be developed across the various fields encompassed within social studies (psychology, sociology, geography, government, economics, history, anthropology, etc.), and other disciplines (mathematics, language arts, science, fine arts, foreign languages, etc.).

The chart at the end of this section indicates the scope of content within the social sciences and across other disciplines. Its fundamental concepts deal with relationships, starting with an understanding of the self and extending to how we relate to the family, the community and ultimately the planet.

2) Inquiry-Based Approach

Active student involvement in actual research and in-depth investigation is important. Through the use of community resources, students should utilize the methodology of the disciplines to take on the roles of historians, sociologists, anthropologists and political scientists.

3) Problem Solving and Decision-Making Approach

Opportunities should be provided for analysis of complex social systems, cultural patterns and how they change, and on study of the future as well as the past. Leadership development, ethical reasoning in relation to citizenship, social change and conceptualizing at a high level of abstractness and complexity are important components.

Working on actual problems and various creative problem-solving approaches are crucial activities to offer in a program of social studies for the gifted. It is from within their ranks that many of our future leaders will emerge.

e. Multicultural Instructional Strategies: Alternative Materials and Sources

In order to foster respect for diversity and appreciation of the contributions of various groups to our nation, a multicultural approach is essential. Teachers need to use multiple sources of information (newspapers, periodicals, research and reference materials, current audio-visual materials, and resource people) to overcome the limitations of a single text.

This must be done to deal effectively with roles and needs of native Americans, different ethnic and cultural groups, women in history, and causes and interactions of historical events.

1) Learning environment

The learning environment should be one which is student centered. Risk-taking, awareness, respect, appreciation of the diverse perspectives of others and multiple student options are key elements. There should also be an emphasis on the provision of hands-on and up-to-date printed materials for student use.

2) Multiplicity of strategies

The strategies listed below work well within this atmosphere. They provide opportunities for individualizing the social studies curriculum and providing important experiences for students with gifted potential:

- Service to the community, nation, globe;
- Work on real, immediate, family, school, local, state, national or global problems;
- Active student involvement in decision-making;
- Direct communication (letters, videos) with students from other communities and nations;
- Field-based experiences;
- Simulations focusing on solving social problems;
- Leadership and management training and experiences;
- Case studies;
- Individualized pacing;
- Self-directed studies;
- Research;
- Community resources;
- Mentorships;
- Affective experiences;
- Debate.

3) Global interdependence

Students with gifted potential should develop an understanding of the importance of cooperation (not just competition) as part of global interdependence. There should be an emphasis on responsibility for the consequences of our actions on others. That includes not just within our own social group or nation, but on the planet as well. This is especially important for gifted children to understand, since they will be the future leaders of our world.

f. Evaluation in Social Studies

The goal, that all students become self-directed learners, dictates that evaluation techniques must be expanded. This requires current methods (pre-tests, post-tests, demonstrations and standardized tests) to be supplemented with alternate forms of teacher, student and peer evaluation.

Appropriate evaluation for projects of students with gifted potential should emphasize individual progress (as measured by predetermined criteria). All of the aspects of evaluation, the evaluator, what is to be evaluated, the criteria and the procedures for evaluation, apply in the study of social science, and other content areas. (See section II, E., Student Evaluation, below.) In addition, the following evaluation criteria should be kept in mind in a course or unit focusing on social studies.

1) Process and individual progress evaluation

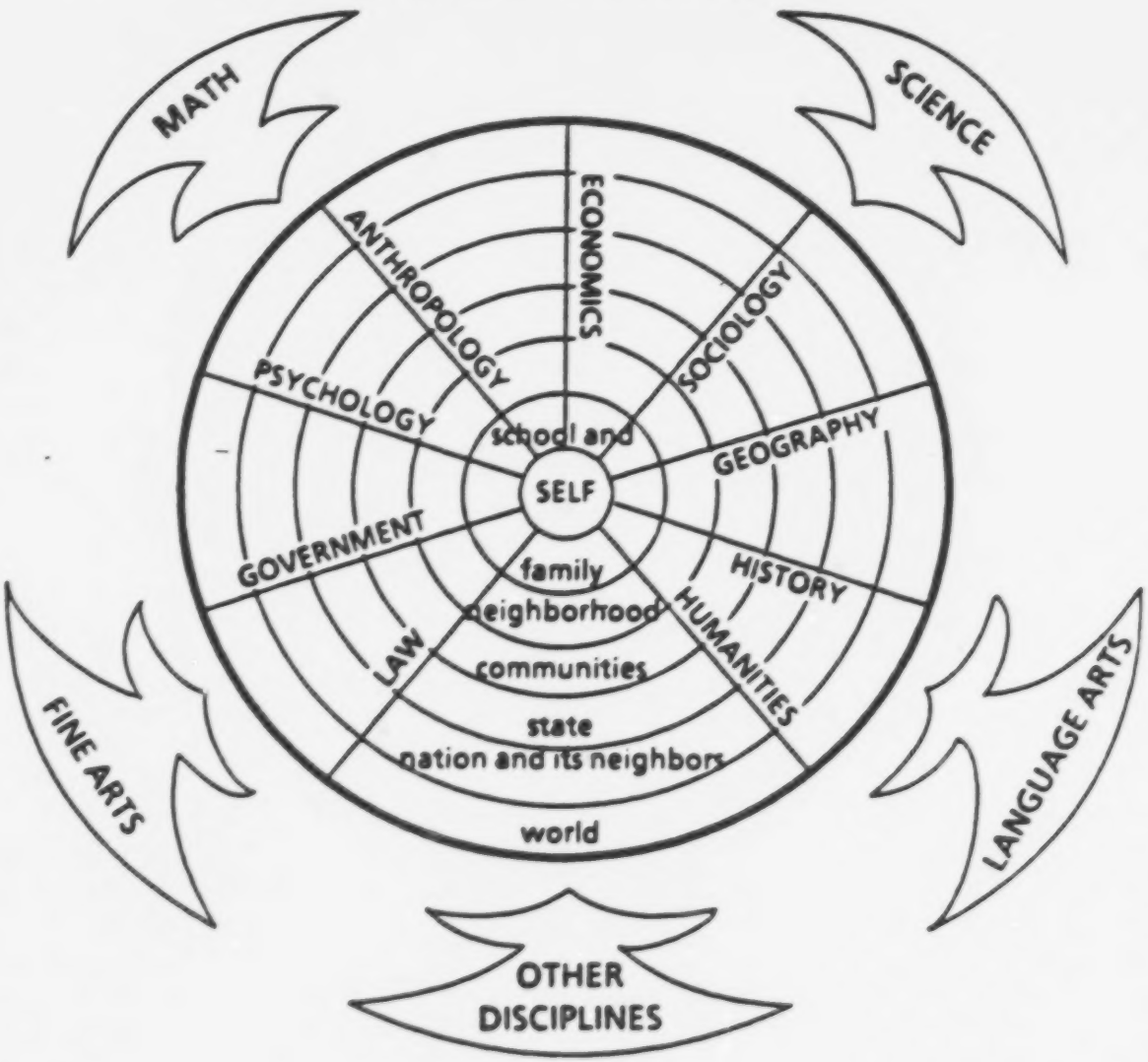
- Risk-taking, the willingness to be wrong, and the capacity to accept others' views are critical cognitive and social skills that should be emphasized and evaluated in social studies;
- The affective goals of a gifted program should be emphasized and may be appropriately evaluated in social studies;
- The capacity to generate creative solutions to social problems is essential to the development of a professional social scientist's creative thinking and is therefore a useful process criterion;
- The ability to analyze the social and ethical consequences to the planet of political decisions or new technologies is a major responsibility of social scientists.

2) Product evaluation

- The criteria students should strive for are those used in the profession, which may include comprehensiveness of a perspective or analysis and its relation to multiple disciplines.

SOCIAL STUDIES. . .

as it relates to self and other disciplines



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D. TEACHING REQUIRED OR BASIC SKILLS

A three pronged approach is most effective in maximizing student potential in dealing with required or basic skills, in either the regular classroom or in a content-specific gifted program option.

1. Diagnostic testing and individualization

Students should be regularly pre-tested, or given diagnostic testing using either commercially prepared pre-tests, tests the teacher planned to use at the end of a unit, or through an informal assessment performed with classroom discussion. This is done to determine which skills or competencies a student has acquired. Test results should indicate which of the following four curriculum modifications is appropriate:

a. Students should be **excused** from spending time on skills or competencies in which they have demonstrated proficiency. Time freed this way should be spent on activities of students' choice and not on extra teacher-determined work (although the student may be asked to apply his or her skills in a self-selected activity).

b. **Remediation** may be necessary for students who are functioning far below minimum levels. This should not be more of the same. Ideally, all students should have skills or competencies integrated into a topic or project that interests them, so that their distinctive motivations will be stimulated.

c. Students functioning two or more grade levels above their own, in a specific skill area, may be offered the option of **continuous progress** by going to a higher level class in that subject.

d. Students functioning three or more grade levels above their own, in all skill areas, may be allowed the option of **skipping a grade**; especially if there are signs that a student is bored and not getting along with age-mates who are not ability peers.

2. Grouping

An extremely effective grouping for basic skills is by learning style (or preferred learning modality) rather than achievement test scores. Options (c) and (d) in (1) above should also be considered as grouping possibilities, depending on student preference and learning style.

3. Means, not end in context and in content

Students with gifted potential, as well as most other students, are more motivated, learn skills faster, and transfer them into application more readily if skills are integrated into a meaningful activity or project they are interested in.

Therefore, the most effective way to teach skills is as a means and not as an end. Specific examples of these are included in the various content area modifications discussed in Section C above; but see, especially, Communication / language arts (Part II, C. 2.).

E. STUDENT EVALUATION

Typical school-directed evaluations, such as pre-tests, post-tests, demonstrations and analysis of products determine the achievement of basic knowledge, but rarely go beyond the recall level of cognition.

Evaluation that maximizes students' potential must be consistent with the following four major process objectives:

- higher level critical and creative thinking;
- independent learning;
- advanced communication skills;
- higher level emotional and social skills.

This will require that current methods (pre-tests, post-tests, demonstrations and standardized tests) be modified in the following ways:

- their weight in evaluation;
- the learning environment (the context of evaluation);
- who is involved in evaluation (the evaluators);
- what aspects of student learning are to be evaluated (which must be related to the advanced curriculum objectives);
- the evaluation criteria to be applied;
- the procedures to be used.

1. Focus of Student Evaluation

One important curriculum objective is to have students learn to evaluate themselves. Student self-evaluation fosters higher level critical thinking skills, higher levels of emotional and social skills, and self-direction in learning. This is necessary for the maximum development of gifted potential. It is the role of the teacher to teach the gifted to objectively evaluate their projects and their individual progress, rather than relying exclusively on the judgments of adults or others.

Evaluation should emphasize individual progress, rather than competitive ratings that are based on external standards.

2. Learning Environment

An atmosphere that is consistent with the goals of evaluation in gifted education should support the following:

- Open-mindedness that allows for the expression and critiquing of diverse views. This is essential for the development of critical thinking skills.
- Evaluation criteria that include originality and divergence. This is crucial for fostering creativity.
- Respect for differences, acceptance of limitations and stress on cooperation as well as competition are required for the nurturing of emotional and social potential.
- Student opportunities for self-evaluation and decision-making will develop all aspects of gifted potential.

3. Evaluators

As students develop projects there should be appropriate, authentic, outcomes based, criterion-referenced evaluation from teacher, peer and self.

a. Self

Rather than depending on test scores or adults, students should become more responsible for their own progress through self evaluation. Teachers should prepare students by structuring an evaluation process, either through a criterion-referenced, outcomes based check-list developed with students, or by predetermined mutually agreed upon criteria for evaluation.

b. Peer

Participating in peer evaluation of products develops the following abilities:

- application of evaluation criteria;
- offering constructive criticism;
- accepting the limitations of others and self;
- becoming an independent learner.

c. Teacher

The purpose of teacher evaluation is not to give the final word, but to help students test their evaluations of their progress and products.

d. Professional

Professionals in the field or medium used in students' products should participate in evaluation. This should be done occasionally on the elementary level and regularly on the secondary level. The purpose is not for profes- sionals to give grades, but to teach students appropriate evaluation criteria and how they are applied.

4. What is to be evaluated

The following aspects of students' learning (related to appropriate objectives for maximizing potential) may be evaluated:

- products;
- process skills used in class, in peer interactions and in products;
- emotional development;
- individual, rather than just comparative progress.

5. Evaluation Criteria

Appropriate evaluation of students' projects should emphasize individual progress as measured by predetermined criteria.

These criteria should be related to criteria used in professional fields. This is done to give students a realistic evaluation framework. The emphasis of the criteria should be on:

- individual progress, rather than just comparative judgments;
- originality, rather than conformity to teacher expectations;
- the process of learning, rather than only the outcome or product.

The criteria will vary depending on what is being evaluated. Teachers and students should discuss and agree upon the criteria used to evaluate possible products, process or individual progress. Possible criteria include:

a. Creativity

- originality (how unusual);
- elaboration (how detailed, complete, or effective);
- flexibility (how different media, or information is related);
- fluency (how many, or how much—this is the least important).

b. Critical thinking
- clarity of expression;
- clarity of analysis;
- appropriateness of evaluation;
- appropriateness of form and style to the medium of expression and for the intended audience.

c. Appropriate level of material (vocabulary, complexity, etc.).

d. Independence or cooperation (depending on the agreed upon criteria).

e. Individual progress
It is useful to get baseline data (or a "pre-assessment") on students by evaluating a product at the beginning of the year. This may be compared to a post-assessment of a similar sample at the end of the year in order to measure individual progress.

f. Professional standards (as they apply to student products). Different media, or different products (a research paper, a poem, a play, a computer program, a business letter, etc.) require different criteria.

Students with gifted potential should become familiar with the criteria used for evaluation in professional fields (non-academic). These criteria will eventually be used to evaluate and judge their work as adults. After understanding real world standards, students should evaluate their growth *toward* them rather than having the standards stringently applied to their work.

6. Evaluation Procedures

a. Teaching evaluation

Essential elements for teaching students evaluation should include:
- developing criteria with students;
- developing methods for making criterion referenced assessment (checklists);
- deciding who will be involved in the assessment;
- applying criteria as consistently as possible.

b. Grading
If grades are to be assigned, they should reflect both quality as perceived by others and by self. Students should not be penalized because they are in some form of homogeneous grouping. Their work should earn grades that are no lower than what they would get for the same work in a regular class.

c. Methods
It is recommended that several of the following authentic, performance based methods or indicators of performance be used in evaluating student progress in relation to specific criteria. These include:
- personal journals,
- checklists (for product or process evaluation),
- demonstrations,
- peer teaching,
- observations by trained professionals,
- rating scales for products (not students),
- classroom discussions,
- open-ended questions,
- essays (oral and written),
- objective tests (when applicable to higher level objectives).

PART III. STAFF DEVELOPMENT

There are major reasons for academic, emotional and social underachievement, especially among students with gifted potential (see Richert,1990). Currently, there is a conflict between the objectives of the typical required curriculum (which focuses on extrinsic rewards and penalizes both creativity and risk taking) and the nurturing of maximum achievement. Maximum achievement is based on intellectual and creative abilities, **and** such traits as intrinsic motivation and risk taking.

If all students, including the gifted, are to be allowed to develop the traits of self-actualizing individuals in the context of schools, then educators themselves must be encouraged to develop their own latent emotional potential.

Therefore, educators are urged to receive instruction and experience in methods for maximizing their students' emotional and intellectual potential as well as their own.

This training has been successful in several states and districts in Kansas. It has resulted in gains in student achievement and increases in teacher satisfaction (Richert, forthcoming, 1993).

Sources for training on cognitive development include, but are not limited to: Colangelo & Zaffran (1979), Gallagher (1979), Guilford (1967), Kaplan (1982), Kohlberg (1981), Meeker (1969), Renzulli (1978), Richert (1986, 1990), Tannenbaum (1983), and Torrance (1979).

Sources for overcoming underachievement and fostering emotional development include but are not limited to: Frankl (1980), Jung (1964), Krathwohl et al (1984), Kohlberg (1981,1983), Kohut (1971), Maslow (1970), Miller (1981), Piechowski and Colangelo (1984), Richert (1982 a, 1982 b, 1986, 1990, 1991, 1993), Roeper (1982), Robinson (1992), Sartre (1967), Taylor (1967) and Zaffran and Colangelo (1977).

1) **Teacher education topics** should include:

- defining maximum intellectual, creative, emotional and ethical potential,
- shifting locus of control from teachers to students in a student-centered classroom,
- modifying the content, process, products and evaluation methods for required subject areas,
- individualizing acceleration,
- individualizing curriculum for interests and learning styles,
- developing critical and creative thinking within required subject areas,
- encouraging students to learn to plan and create original products,
- fostering self-actualization (intrinsic motivation, risk taking, self-esteem independent of external evaluation, self-evaluation, responsibility for consequences of actions, etc.),
- managing peer interaction, cooperation and socialization,
- modifying cooperative learning to make it appropriate for students with gifted potential.

2) **Administrator training** should focus on:

- the need for pluralism and diversity in definition, identification and program design for students with gifted potential,
- development of low cost, high quality gifted programs and modifying existing resources to serve more students with gifted potential,
- policies for curricular flexibility, particularly various forms of acceleration,
- management of exemplary and equitable gifted programs,
- modifying required subject areas, including integration of curriculum,
- supervision and evaluation of teachers trained in providing individualized instruction to students in particular disciplines.

3) **All staff**

All educators in a district need some background in the needs of students with gifted potential. The implementation of an effective gifted program requires prepared staff capable of carrying out their various responsibilities. Therefore, a staff development plan is essential. Eventually, all staff members (including administrators) need some training in:

- identification and characteristics of the gifted;
- the academic and psychological needs of students with gifted potential;
- the need for some homogeneous grouping for students with gifted potential;
- how to meet the needs of the gifted in heterogeneous grouping;
- how to offer performance-based evaluation that goes beyond standardized testing.

This approach to staff development benefits many more than the 3-5% of students typically served in gifted program: Given the program design suggested, **at least 40% of students will benefit from any training planned** for teachers serving students with gifted potential. These teachers will also be serving other students with the new skills they have learned in staff development.

PART IV. RELATION TO KSBE DIRECTIONS

The recommendations in this guide support many major initiatives of the Kansas State Board of Education. These initiatives and how this guide supports them are summarized below:

1) STRATEGIC DIRECTIONS FOR KANSAS EDUCATION

Direction 1: Create Learning Communities
The relationships between the learner, teacher, the school and the community fostered through this approach will develop communities where learning becomes self-initiated.

Direction 3: Expand Learner-Outcome Curriculum and Learner-Focused Instruction
The major goal of this guide is to develop student-centered curriculum which responds to the interests, learning styles and individual needs of students.

Direction 4: Provide Inclusive Learning Environments
It is stressed that the methods being recommended should be used with all students, though first and foremost with students with gifted potential who are equitably identified.

Direction 5: Strengthen Involvement of Business and Industry in Education
The recommendations to use professional criteria for evaluation and to offer mentorships supports this direction.

Direction 6: Provide Quality Staff and Organizational Development
This guide suggests specific goals for staff development .

2) SCANS COMPETENCIES

These competencies will be enhanced by the guide's recommendations:

Resources: allocating time, money, materials, space and staff.

Interpersonal Skills: working on teams, teaching others, leading, negotiating and working well with people from culturally diverse backgrounds.

Information: acquiring and evaluating data, organizing and maintaining files, interpreting and communicating and using computers to process information.

Systems: understanding social and organizational systems, monitoring and correcting performance and designing or improving systems.

Technology: selecting equipment and tools, applying technology to specific tasks.

3) SCANS FOUNDATION

These foundations are explicitly addressed by this guide:

Basic Skills: reading, writing, arithmetic and mathematics, speaking and listening.

Thinking Skills: thinking creatively, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn and reasoning.

Personal Qualities: individual responsibility, self-esteem, sociability, self-management and integrity.

4) KANSAS QUALITY PERFORMANCE ACCREDITATION (QPA)

All of these QPA outcomes are being supported by this guide:

Outcome 1: Teachers, principals, board members and all other educational staff establish high expectations for student learning and provide continuous monitoring of student achievement.

Outcome 2: Schools have a basic mission which prepares the learners to live, learn and work in a global society.

Outcome 3: Teachers, principals, board members and other educational staff demonstrate that students are actively engaged in learning within an orderly and safe environment.

Outcome 4: Schools have an instructional leadership which results in improved student performance.

Outcome 5: Students communicate effectively to live, learn and work in a global society.

Outcome 6: Students think creatively and solve problems necessary to live, learn and work in a global society.

Outcome 7: Students work effectively both independently and in groups in order to live, learn and work in a global society.

Outcome 8: Students have the physical and emotional well-being necessary to live, learn and work in a global society.

Outcome 9: Staff development results in increased staff knowledge and new or enhanced instructional skills that result in increased student success.

Outcome 10: The schools and community collaborate to create a learning community.

5) SYSTEM OF MEASURES and STANDARDS OF PERFORMANCE for SECONDARY (Required by the Carl D. Perkins Vocational and Applied Technology Act, Amendments of 1990)

The following standards are strongly supported by this guide:

a. Measures of learning and competency gains, including student progress in the achievement of basic and more advanced academic skills

The modifications recommended for required subject areas improves performance in skills areas as well as in critical thinking and advanced content areas (Richert, forthcoming, 1993).

b. Student competency attainment includes the following:

- **From Year One**: Managing resources and time, participating as a team member, using computers to process information and decision making and problem solving;

- **From Year Two**: Managing resources and materials, interpreting and communicating information: listening skills, speaking skills and learning strategies;

- **From Year Three:** Managing resources: financial, human, and facility; exhibiting work ethics: demonstrating integrity and honesty; creative thinking: visualizing, using self-management and skills-taking responsibility, and exhibiting self-esteem.

c. Job, or work skill attainment or enhancement, including student progress in achieving occupational skills necessary to obtain employment in the field for which the student has been prepared, including occupational skills in the industry the student is preparing to enter:

An interest-based approach will allow students to relate required subject areas to what they value, which should include their chosen occupation. Evaluation emphasizes individual progress and criterion referenced self evaluation that will prepare students to function independently in any occupation.

d. Retention in school or completion of secondary school or its equivalent

This approach stresses an interest-based curriculum, nurtures the affective needs of students, involves pretesting and consequent work on only unmastered skills and competencies. It therefore avoids redundancy and boredom, motivates students and may serve to increase retention rates (Richert, 1993).

e. Incentives or adjustments that are designed to encourage service to targeted groups or special populations and developed for each student and, if appropriate, be consistent with the student's individualized education program developed under section 614 (a) (5) of the Individuals With Disabilities Education Act:

This approach serves all groups equitably and guarantees equitable representation of special populations. The identification recommended (Richert, 1991) involves renorming for sub-populations, a method that ensures inclusion of special population students and compensates for test bias.

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This Publication was completed with support under an Agreement with the Kansas State Board of Education, Jacob K. Javits Gifted Project, under a grant received from the United States Department of Education, Grant No. R206A00008.

Strategic Directions for Kansas Education

The Kansas State Board of Education is charged with the general supervision of public education and other educational interests in the state. While clearly acknowledging the role and importance of local control, the State Board of Education has the responsibility to provide direction and leadership for the structuring of all state educational institutions under its jurisdiction.

The beginning place for determining the mission for the Kansas State Board of Education is the assumption that all Kansas citizens must be involved in their own learning and the learning of others. It is the combined effort of family, school, and community that makes possible the development of a high quality of life. It is the parent who is the first "teacher" of children. As we grow older, we learn that the school, the workplace, and the community support our lifelong learning and our training and retraining. The Board recognizes the responsibility it holds for Kansas educational systems and promoting quality education programs. The mission for Kansas education is:

To prepare each person with the living, learning, and working skills and values necessary for caring, productive, and fulfilling participation in our evolving, global society.

We believe that the strategic directions for the structuring of Kansas education must be organized to:

- create learning communities
- develop and extend resources for parenting programs and early childhood education
- expand learner-outcome curriculum and learner-focused instruction
- provide inclusive learning environments
- strengthen involvement of business and industry in education
- provide quality staff and organizational development.

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